# Performing Receipt Inspections

# WATERFOODS

# OVERVIEW

- **Waterfood Consumption/Terminology**
- **Pathogens associated with waterfoods**
- **Deterioration of waterfoods**
- **Inspection and handling factors to reduce disease associated with waterfoods**

# WATERFOOD CONSUMPTION

- *1989 - 15.9 lbs per capita*
- *1995 - 15.0 lbs per capita*
- *WHY THE DROP?*
- *65% of all WATERFOOD is imported*
- *85% of SHRIMP is imported*
- *TUNA is #1 and SHRIMP is #2 in types of waterfoods consumed*

Source: Meat Processing, November

# Terms

- Shellfish:
  - Mollusks
    - Examples?
  - Crustaceans
    - Examples?
- Finfish
    - Examples?

# Federal Inspection Programs

WATERFOODS:

- The FDA and USDC have jurisdiction over inspection and importation of waterfoods

*VERY SMALL PERCENTAGE IS ACTUALLY INSPECTED!!*

# Waterfood Pathogens

- Remember the two types of foodborne illness?
  - 
  - 
- We have both types in waterfoods

# Waterfood Pathogens: INTOXICATIONS

- *Scombroid poisoning*
  - Histamine produced by microbes in fish after the fish dies and is held unrefrigerated
  - Transmission:  Finfish such as tuna, mackerel, mahi mahi
  - Disease:  Systemic allergic reaction because of histamine
  - Incubation:  Usually < 2 hrs
  - Toxin not destroyed by cooking!
  - So how do we prevent this?

# Waterfood Pathogens: INTOXICATIONS (cont.)

- Have you heard of the Red Tide?
  - Toxin produced by an algea that grows in ocean waters under right conditions
- *Ciguatera poisoning*
  - Live finfish ingest/concentrate the Red Tide toxin
  - Especially a problem in predatory barrier reef fish because they eat smaller fish and concentrate the toxin (Snapper, Grouper, Barracuda, etc.)

# Waterfood Pathogens: INTOXICATIONS (cont.)

- Red Tide (cont.):
- *Paralytic Shellfish Poisoning (PSP)*
  - Shellfish concentrate the Red Tide toxin
- For both Ciguatera and PSP:
  - Disease:  Neurological effects, may have diarrhea
  - Incubation:  usually < 4hrs
  - Toxin is not destroyed by cooking!
  - So, how do we prevent Ciguatera and PSP?

# Waterfood Pathogens: INFECTIONS

- What types of microbes cause infections?

1.
2.
3.

# Waterfood Pathogens: INFECTIONS (cont.)

- Bacteria
  - Some of the same bacteria we discussed before
  - What are some others commonly associated with waterfoods?
    1.
    2.

# Waterfood Pathogens: INFECTIONS (cont.)

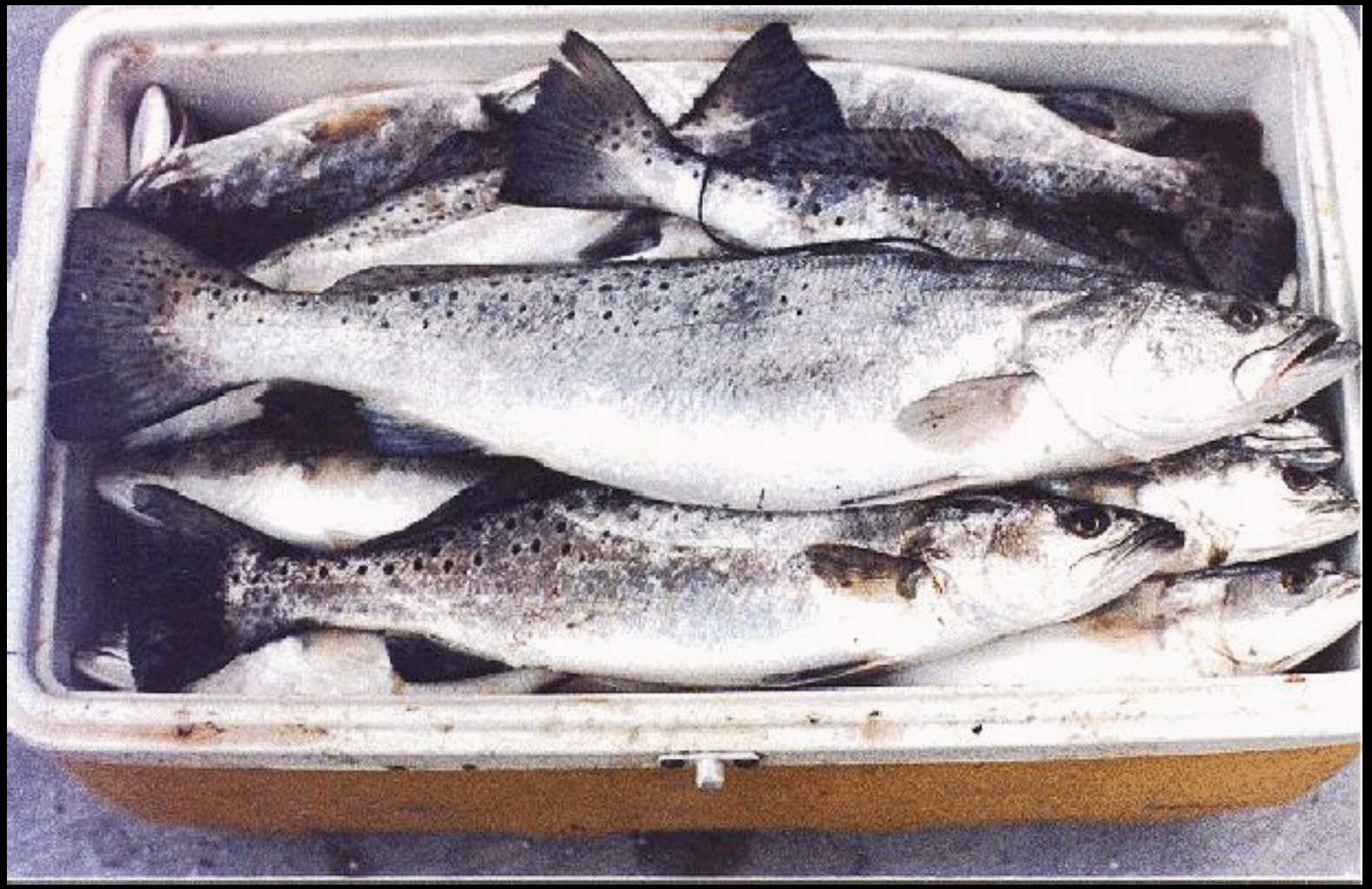
- Viruses
  - Same as other viruses we discussed

# Waterfood Pathogens: INFECTIONS (cont.)

- Parasites:
  - *Anisakiasis*
  - Worm larvae are in finfish viscera or muscles
    - So in what specific kinds (examples) of foods would we be concerned about anisakiasis?
  - Disease:  stomach pain, vomiting, may develop diarrhea
  - Incubation:  few hours to days
  - Control:  Thorough freezing or cooking

# Deterioration of Waterfoods

- Deterioration is 10 times faster at $60^0$F than at $32^0$F for waterfoods
  - Why would this be?
- Main causes of unacceptable seafood: 1) Growth of spoilage bacteria
  2) Enzymatic action in fish
  3) Oxidation (rancidity)



# CHARACTERISTICS OF FRESH, STALE, AND PUTRID FISH

| CHARACTERISTIC | FRESH | STALE | PUTRID |
|---|---|---|---|
| APPEARANCE | BRIGHT | DULL - DRY | DULL - DRY |
| ODOR | NONE | SLIGHT | OFFENSIVE!!! |
| EYES | CLEAR | OPAQUE | SUNKEN, NO COLOR |
| GILLS | RED | REDDISH GREY | DARK BROWN |
| SCALES | GLISTENY | DULL/LOOSE | DRY/LOOSE |
| SURFACE | SMOOTH/CLEAR | VISCOUS | DRY |
| FLESH | FIRM | SOFT | FLABBY |
| BLOOD | BRIGHT | DARK BROWN | DIRTY BROWN |

# Factors to Reduce Disease Transmission

- Approved Sources!
  - Remember the references?
- Proper refrigeration or arrive frozen
  - Use spoilage characteristics as indicators of mishandling
- Proper cooking
  - Food Code gives required temperature
  - Does this take care of everything?
- Freezing
  - What does this kill?

**“Keep it cold, keep it clean, keep it moving until it hits the pan”**

# Summary

- Name a waterfood parasite
- Name 3 waterfood intoxications
- Name an example of a waterfood pathogen:
  - Bacterial
  - Viral
- How do we prevent waterfood disease?
- What are the characteristics of fresh fish?